WHAT IS CLAIMED IS:

1. A method for registering surfaces comprising:

acquiring a first surface from a body having curvature to be imaged;

acquiring a second surface from said body;

determining a first curvature of said first surface;

determining a second curvature of said second surface;

shading said first surface in response to said first curvature;

shading said second surface in response to said second curvature; and

varying orientation of at least one of said first surface and said second surface to align said first surface and said second surface in registration with each other.

2. The method for registering surfaces of claim 1 wherein the step of determining a first curvature comprises determining a mean curvature.

3. The method for registering surfaces of claim 2 wherein, in a Cartesian coordinate system, said mean curvature is represented as

$K_m=(k_{xx} + k_{yy})/2$,

where $k_{xx} = [n_x (x+a, y, z) - n_x (x-a, y, z)] /2a$; and

$k_{yy} = [n_y (x, y+b, z) - n_y (x, y-b, z)] /2b$, and wherein n_x and n_y represent vectors in the x and y directions, respectively, when the direction normal to each of said first and second curvatures is in the z direction, and a, b, and c are the spacings between sampled points.

4. The method for registering surfaces of claim 1 wherein the step of determining a first curvature comprises determining a Gaussian curvature.

5. The method for registering surfaces of claim 4 wherein said Gaussian curvature is represented as

$K_g = k_{xx}k_{yy} - k_{xy}k_{yx}$,

where $k_{xx} = [n_x (x+a, y, z) - n_x (x-a, y, z)] /2a$;

$k_{yy} = [n_y (x, y+b, z) - n_y (x, y-b, z)] /2b$;

$k_{xy} = [n_x (x, y+b, z) - n_x (x, y-b, z)] /2b$; and

$k_{yx} = [n_y (x+a, y, z) - n_y (x-a, y, z)] /2a$, and wherein n_x and n_y represent vectors in the x and y directions, respectively, when the direction normal to each of said first and second curvatures is in the z direction, and a, b, and c are the spacings between sampled points.

6. The method for registering surfaces of claim 1 wherein the step of determining a second curvature includes the step of processing said second surface with marching cubes.

7. The method for registering surfaces of claim 1 wherein said first surface represents a patient and is generated from patient range data.

8. The method for registering surfaces of claim 1 wherein said second surface represents a patient and is generated from image data.

9. The method for registering surfaces of claim 7 wherein said second surface represents the patient and is generated from image data.

10. A storage medium encoded with machine-readable computer program code for registering surfaces comprising instructions for causing a computer to implement a method of:

acquiring a first surface from a body having curvature to be imaged;;

acquiring a second surface from said body;

the direction normal to each of said first and second curvatures is in the z direction, and a, b, and c are the spacings between sampled points.

15. The storage medium of claim 10 wherein said medium is adapted to determine said second curvature by processing said second surface with a marching cubes process.

16. The storage medium of claim 10 wherein said first surface represents a patient and said storage medium includes instructions for causing the computer to generate said first surface from patient range data.

17. The storage medium of claim 10 wherein said second surface represents a patient and said storage medium includes instructions for causing the computer to generate said second surface from patient image data.

18. A storage medium of claim 10 wherein said second surface represents a patient and said storage medium includes instructions for causing the computer to generate said second surface from patient image data.

determining a first curvature of said first surface;

determining a second curvature of said second surface;

shading said first surface in response to said first curvature;

shading said second surface in response to said second curvature; and

varying orientation of at least one of said first surface and said second surface so as to align said first and second surface in registration with each other.

11. The storage medium of claim 10 wherein the first curvature is a mean curvature.

12. The storage medium of claim 11 wherein, in a Cartesian coordinate system, said mean curvature is represented as

$K_m=(k_{xx} + k_{yy})/2$

where $k_{xx} = [n_x (x+a, y, z) - n_x (x-a, y, z)] /2a$, and

$k_{yy} = [n_y (x, y+b, z) - n_y (x, y-b, z)] /2b$, and wherein n_x and n_y represent vectors in the x and y directions, respectively, when the direction normal to each of said first and second curvatures is in the z direction, and a, b, and c are the spacings between sampled points.

13. The storage medium of claim 10 wherein the first curvature is a Gaussian curvature.

14. The storage medium of claim 13 wherein said Gaussian curvature is represented as

$K_g = k_{xx}k_{yy} - k_{xy}k_{yx}$,

where $k_{xx} = [n_x (x+a, y, z) - n_x (x-a, y, z)] /2a$;

$k_{yy} = [n_y (x, y+b, z) - n_y (x, y-b, z)] /2b$;

$k_{xy} = [n_x (x, y+b, z) - n_x (x, y-b, z)] /2b$; and

$k_{yx} = [n_y (x+a, y, z) - n_y (x-a, y, z)] /2a$, , and wherein n_x and n_y represent vectors in the x and y directions, respectively, when